

Appl. No. 10/520,308  
Amdt. Dated July 31, 2006  
Reply to Office Action of May 12, 2006

**REMARKS**

Claims 1 to 11 are currently pending in the present application.

The Action states that the title of the subject application is not descriptive. The Action requires a new title that is clearly indicative of the invention to which the claims are directed. The title of the subject application has been amended to read:

**X-RAY APPARATUS HAVING MEANS FOR DETERMINING MOVABLE  
COMPONENT POSITIONS**

Applicants submit that the amended title is clearly indicative of the invention to which the claims are directed.

The Action further points out that the specification lacks some of the suggested section headings. Applicants respectfully decline to add additional section headings, as they are not required in accordance with MPEP §608.01(a).

Claims 1 to 11 stand rejected by the Action under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,048,070 to Maehama et al. (hereinafter "Maehama"). Applicants respectfully submit that Maehama does not expressly or inherently disclose all of the elements set forth in independent claims 1 and 10. Thus, Maehama does not anticipate claim 1 or 10 or claims 2 to 9 and 11 which depend therefrom.

It is an object of the present invention to provide an apparatus, notably an X-ray apparatus, which comprises improved means for determining the position of components of the apparatus. Accordingly, claim 1 is directed to an apparatus which comprises two components which are displaceable relative to one another, a position visualization unit which is provided on one component of the apparatus, or on a part which is connected thereto, an image acquisition unit which is provided on the other component of the

Appl. No. 10/520,308  
Amdt. Dated July 31, 2006  
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apparatus, or to a part which is connected thereto, in order to acquire images of a segment of the position visualization unit which changes due to a relative motion between the components of the apparatus, and an evaluation unit for extracting position information from the images.

In contrast, Maehama is simply directed to a ceiling-suspended X-ray tube support apparatus for positioning an X-ray tube with respect to the center of a photographing table, and setting an SID without depending on a vision of an examiner. Maehama fails to disclose a position visualization unit and an image acquisition unit for acquiring images of a segment of the position visualization unit which changes due to a relative motion between the components of the apparatus, as disclosed in claim 1 of the subject application.

The Action improperly equates positions P1 and P2 of component 2 of Fig. 2 of Maehama with the visualization unit of claim 1. In fact, component 2 is a longitudinal rail and P1 and P2 merely reflect positions determined by position identification sensors 17 which are arranged at a plurality of specific longitudinal positions of longitudinal rail 2. Positions P1 and P2 are not analogous to the visualization unit disclosed in claim 1, because they do not provide visualization means, let alone a visualization means which enables the position of the component of the apparatus on which it is disposed be determined relative to the other component of the apparatus.

The Action further improperly equates the position sensors of Maehama with the image acquisition unit of claim 1. The position sensors of Maehama are arranged in a vertical moving path of the X-ray tube support mechanism and the two-dimensional moving paths to the central position of the photographing table, for detecting vertical and two-dimensional moving positions of the X-ray tube support mechanism. Maehama does not disclose an image acquisition unit, let alone an image acquisition unit for acquiring an image, wherein the part of the position visualization unit which is present in the acquisition zone at the instant of acquisition will be represented in the image.

Appl. No. 10/520,308  
 Amdt. Dated July 31, 2006  
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Additionally, the position visualization unit of claim 1 can move through the acquisition zone of the image acquisition device during a relative motion of the two components of the apparatus. Maehama fails to provide a position visualization unit which through an image acquisition zone.

Maehama further fails to disclose an evaluation unit as is claimed in claim 1. Rather, Maehama discloses an output unit, which stores position data in accordance with the central position of a photographing table and a set distance from the focal point of the X-ray tube to an X-ray photographing system. The Maehama output unit compares the position data with a position detection signal of the position detected by each position sensor and outputs a lock instruction to a corresponding fixing unit when it is determined that the position data coincides with the position detection signal, thus locking the X-ray tube support mechanism. In contrast, the evaluation unit of claim 1 takes the image acquired by the image acquisition unit and applies it to the evaluation unit which recognizes the shape of the segment of the position visualization unit represented so that it extracts the position information contained therein. The position of the two components of the apparatus is then determined from the position information extracted. Maehama does not disclose any comparable means for acquiring an image wherein part of the position visualization unit which is present in the acquisition zone at the instant of acquisition is represented in the image, wherein the position of the two components of the apparatus can then be determined from the image thus extracted.

As stated in the subject application, the position visualization unit and image acquisition unit of claim 1 provide several advantages not provided by Maehama or the prior art including rectifying an existing problem in position determination systems wherein the long, horizontally extending ropes provide slack that gives rise to undesirable inaccuracies. The construction on the apparatus in accordance with claim 1 however, is independent of the location of building in. Moreover, the position determination system of claim 1 is independent of the type of path (straight, curved, etc.) along which the position visualization unit is moved relative to the image acquisition unit. The sole

Appl. No. 10/520,308  
Amdt. Dated July 31, 2006  
Reply to Office Action of May 12, 2006

condition is that a segment of the position visualization unit must be present in the acquisition zone of the image acquisition unit.

Accordingly, for at least these reasons, independent claim 1 is clearly patentable over Maehama.

Claims 2 to 9 depend directly or indirectly from claim 1 and provide further features thereto. Accordingly, claims 2 to 9 are clearly distinguishable over Maehama for at least the reasons discussed with respect to claim 1.

Claim 10 is directed to an X-ray apparatus which comprises two components which are displaceable relative to one another, a position visualization unit which is provided on one component of the apparatus, or on a part which is connected thereto, an image acquisition unit which is provided on the second component of the apparatus, or on a part which is connected thereto, in order to acquire images of a segment of the position visualization unit which changes due to the motion, and an evaluation unit for extracting position information from the images.

As discussed with respect to claim 1, Maehama fails to disclose a position visualization unit and an image acquisition unit for acquiring images of a segment of the position visualization unit which changes due to a relative motion between the components of the apparatus. Thus, claim 10 is distinguishable over Maehama for at least the reasons discussed with respect to claim 1. Claim 11 depends from claim 10 and provides further distinguishing features thereto and is, therefore, patentable over Maehama for at least the reasons discussed.

Accordingly, the rejections under 35 U.S.C. § 102(b) of claims 1 and 2 to 6 and claims 10 and 11 should be withdrawn and claims 1 to 11 should be allowed.

Appl. No. 10/520,308  
Amdt. Dated July 31, 2006  
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**Conclusion**

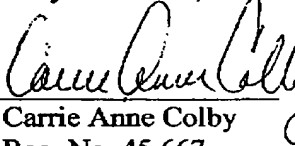
In view of the foregoing, Applicants respectfully submit that the specification, the drawings and all claims presented in this application are currently in condition for allowance. Accordingly, Applicants respectfully request favorable consideration and that this application be passed to allowance.

Should any changes to the claims and/or specification be deemed necessary to place the application in condition for allowance, the Examiner is respectfully requested to contact the undersigned to discuss the same.

Applicants' representative believes that this response is being filed in a timely manner. In the event that any extension and/or fee is required for the entry of this amendment the Commissioner is hereby authorized to charge said fee to Deposit Account No. 14-1270. An early and favorable action on the merits is earnestly solicited.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call David Barnes, Esq., Intellectual Property Counsel, Philips North America Corporation at the number below.

Respectfully submitted,

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